Slip-On Flange — ASME B16.5 Class 400

ANSI / ASME B16.5 Class 400 slip-on raised face (SORF) flanges · NPS ½" to 24" · Carbon steel ASTM A105, stainless steel ASTM A182 F304 / F316, alloy steel

ASME B16.5 CLASS 400 SLIP-ON FLANGE

A slip-on flange (SO / SORF) slides over the pipe end and is secured with two fillet welds — one on the hub, one inside at the bore. The bore is slightly larger than the pipe OD, so alignment is easy and no bevel is needed: it is the lowest-cost welded flange for low- and medium-pressure process, water and utility piping.

TESCO Steel & Engineering manufactures ASME B16.5 Class 400 slip-on flanges in Mumbai, India, ½" to 24", RF or FF, bored to suit ASME B36.10M / B36.19M pipe.

KEY FEATURES

- **Full ASME B16.5 compliance** — dimensions, bore, tolerances, facing and marking to B16.5-2020.
- **Easy fit-up** — bore ID = pipe OD + clearance; no bevelling; pipe set back for the internal weld.
- **Two fillet welds** — hub and face welds; lower cost than weld neck, about two-thirds of its strength.
- **Materials and certification** — A105, A350 LF2, A182 F304/F316, F11/F22, duplex; EN 10204 3.1.

INSTALLATION — SLIP-ON WELDING

- Set the pipe end back from the flange face by the wall thickness + 3 mm so the internal weld does not stand proud of the face.
- Weld the hub fillet first (leg ≥ 1.4 × wall), then the internal face fillet; grind flush if it projects beyond the face.
- Not recommended for severe cyclic, high-temperature or hydrogen service — use weld neck flanges there.

SPECIFICATION SUMMARY

Product	Slip-on flange (SO / SORF), forged
Standard	ASME B16.5 (formerly ANSI B16.5)
Pressure class	Class 400 (400 lb / #400)
Size range	NPS ½" – 24" (DN 15 – DN 600)
Facing	Raised face (RF) 7 mm standard; flat face (FF) on request
Face finish	Serrated, 125 – 250 µin Ra (3.2 – 6.3 µm) per ASME B16.5
Bore	ID = pipe OD + clearance per ASME B16.5 (suits all schedules)
Welds	Hub fillet + internal face fillet, ASME B31.3 Fig. 328.5.2B
Materials	ASTM A105 / A105N; A350 LF2; A182 F304/L, F316/L, F321; F11, F22, F91; duplex

APPLICATIONS

Water treatment and distribution · HVAC and chilled-water headers · fire-protection mains · low-pressure process and utility piping · pump, valve and tank nozzle connections · shipbuilding and offshore utility services · air, nitrogen and drain lines.

SLIP-ON VS OTHER FLANGE TYPES

Slip-on (SO)	Pipe through bore, two fillet welds; lowest cost
Weld neck (WN)	Butt weld; highest strength; critical / cyclic service
Socket weld (SW)	Pipe in socket, one fillet weld; NPS ½ – 3

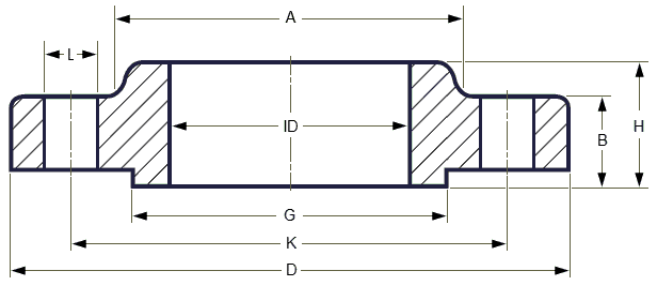
ASME B16.5 CLASS 400 SLIP-ON FLANGE DIMENSIONS (MM)

ASME B16.5 · CLASS **400** SLIP-ON FLANGE · RAISED FACE · DIMENSIONS IN MM — 19 sizes

NPS inch	D OD	B Thick.	A Hub Ø	H Length thru hub	ID Bore	G RF Ø	K Bolt circle	Bolting No.	Bolting L · Hole Ø	Bolting Stud	Weight kg approx.
1/2"	95	14.3	38	22	22.2	35	66.7	4	15.9	1/2"	1.3
3/4"	115	15.9	48	25	27.7	43	82.6	4	19.0	5/8"	1.5
1"	125	17.5	54	27	34.5	51	88.9	4	19.0	5/8"	1.8
1 1/4"	135	20.7	64	29	43.2	64	98.4	4	19.0	5/8"	2.3
1 1/2"	155	22.3	70	32	49.5	73	114.3	4	22.2	3/4"	3.2
2"	165	25.4	84	37	61.9	92	127.0	8	19.0	5/8"	4.1
2 1/2"	190	28.6	100	41	74.6	105	149.2	8	22.2	3/4"	5.9
3"	210	31.8	117	46	90.7	127	168.3	8	22.2	3/4"	7.3
4"	255	35.0	146	51	116.1	157	200.0	8	25.4	7/8"	11.8
5"	280	38.1	178	54	143.8	186	235.0	8	25.4	7/8"	14.1
6"	320	41.3	206	57	170.7	216	269.9	12	25.4	7/8"	20
8"	380	47.7	260	68	221.5	270	330.0	12	28.6	1"	31
10"	445	54.0	321	73	276.2	324	387.4	16	31.8	1 1/8"	42
12"	520	57.2	375	79	327	381	450.8	16	34.9	1 1/4"	59
14"	585	60.4	425	84	359.2	413	514.4	20	34.9	1 1/4"	82
16"	650	63.5	483	94	410.5	470	571.5	20	38.1	1 3/8"	107
18"	710	66.7	533	98	461.8	533	628.6	24	38.1	1 3/8"	130
20"	775	69.9	587	102	513.1	584	685.8	24	41.3	1 1/2"	157
24"	915	76.2	702	114	616	692	812.8	24	47.6	1 3/4"	232

- All dimensions in millimetres per ASME B16.5-2020 Tables 12 and 13 (metric). Thickness B excludes the 7 mm raised face; length through hub H includes it. NPS ½ – 3½ Class 400 flanges use the Class 600 dimensions per ASME B16.5.
- Bore ID per ASME B16.5 (pipe OD + clearance) suits any pipe schedule. Studs per ASME B16.5 Table B1; hole Ø L is 3 mm larger than the stud. Weights approximate, carbon steel.

SLIP-ON FLANGE DIMENSIONAL DRAWING



D Flange outside diameter

B Flange thickness (excl. 7 mm RF)

A Hub diameter

H Length through hub

ID Bore (pipe OD + clearance)

G Raised face diameter

K Bolt circle diameter (PCD)

L Bolt hole diameter

Selection: about one-third the fatigue life and two-thirds the strength of a weld neck of the same class; the pipe-to-flange crevice makes slip-on flanges less suitable for corrosive or hygienic service. **Also known as:** ANSI B16.5 400 lb SO flange · 400# slip-on raised face flange · SORF Class 400 · slip-on welding flange (≈ PN 64).

SLIP-ON FLANGE MATERIALS

Carbon steel	ASTM A105 / A105N (most common)
Low-temperature CS	ASTM A350 LF2 Cl.1 / Cl.2, LF3
Stainless steel	ASTM A182 F304 / F304L, F316 / F316L, F321, F347
Alloy steel	ASTM A182 F5, F9, F11, F12, F22, F91
Duplex / super duplex	ASTM A182 F51 (UNS S31803 / S32205), F53 (S32750), F55 (S32760)
Nickel & copper alloys	Monel 400, Inconel 600 / 625, Hastelloy C276, Cu-Ni 90/10 — on request
Equivalent EN / DIN grades	P250GH (1.0460), 1.4301, 1.4401, 1.4404, 1.4571 on request

PRESSURE–TEMPERATURE RATINGS

PRESSURE–TEMPERATURE RATING **Class 400** BAR, ASME B16.5 TABLE 2

Temperature °C	Group 1.1 A105 / A350 LF2	Group 2.1 A182 F304	Group 2.2 A182 F316
–29 to 38	68.1	66.2	66.2
100	62.1	56.3	57.6
150	60.1	51.3	52.7
200	58.4	47.6	49.0
250	55.9	44.5	45.9
300	53.1	42.2	43.5
350	50.1	40.4	41.7
400	46.3	39.2	40.6
450	38.4	38.4	39.2

Working pressure in bar (gauge) from ASME B16.5-2020 Table 2-1.1, 2-2.1 / 2-2.2. Ratings apply to the flange; confirm for the specific material group, bolting, gasket and welds.

QUALITY & DOCUMENTATION

- Forged from certified bars / billets; normalised, quenched-and-tempered or solution-annealed per material specification.
- Manufactured under an ISO 9001:2015 quality management system; marking per ASME B16.5 and MSS SP-25.
- EN 10204 3.1 material test certificates with chemical analysis, mechanical properties and heat-number traceability; 3.2 with third-party endorsement on request.
- Bore gauged 100 %; dimensional inspection to ASME B16.5 tolerances; face finish per MSS SP-6.
- NDT (MPI / DPT), PMI for stainless and alloy grades, IBR, NACE MR0175 / ISO 15156 and PED compliance on request.

FREQUENTLY ASKED QUESTIONS

Do I need to specify the pipe schedule for a slip-on flange?

No — the bore fits the pipe OD, which is the same for every schedule. Specify the schedule only to size the fillet welds.

Slip-on or weld neck?

Slip-on for low- and medium-pressure, non-cyclic service where cost and easy alignment matter; weld neck for high pressure, high temperature, cyclic loading, hydrogen or sour service.

Can a slip-on flange be used with a raised face against cast iron?

Use a flat face with a full-face gasket against Class 125 cast iron (ASME B16.5 §5.3.4) — FF slip-on flanges are available on request.

Which gasket and bolts are used?

Spiral wound (ASME B16.20) or non-metallic (ASME B16.21) gaskets with A193 B7 / A194 2H studs and nuts; B8M Cl.2 for stainless flanges.

ORDERING INFORMATION

Specify: quantity · size (NPS) · ASME B16.5 Class 400 slip-on · facing (RF / FF) · material grade · certification (3.1 / 3.2, NACE, IBR, PED) · surface protection (anti-rust oil, paint, galvanising).